

## >> FLACHSENKER, DIN 373, FEIN

### Einsatzbereich:

Für alle E- und NE-Metalle, Kunststoffe hart und weich. Zur Verwendung in Durchgangslöchern nach DIN 273 bei Einzel- und Serienfertigung.

## COUNTERBORES, DIN 373, FINE


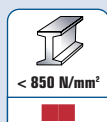



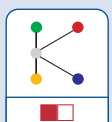
### Range of application:

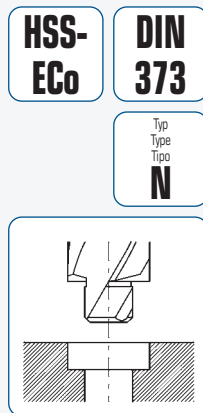
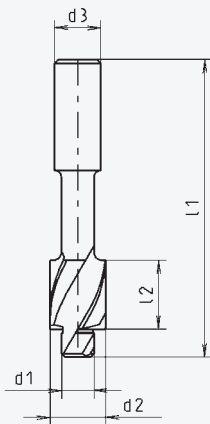
For ferrous and non-ferrous metals, synthetic materials soft and hard, for working in through holes according to DIN 273. Suitable in individual and mass production.

## ALLARGATORI PER SEDI VITI, DIN 373, FINE


### Impiego:

Adatti per tutti i materiali ferrosi, non ferrosi, plastiche dure e dolci, per fori passanti secondo DIN 273, sia per lavorazioni singole che di serie.

 < 400 N/mm <sup>2</sup>	 < 850 N/mm <sup>2</sup>	 < 1.100 N/mm <sup>2</sup>	 < 1.300 N/mm <sup>2</sup>	 > 45 HRC	<b>INOX</b> < 850 N/mm <sup>2</sup>	<b>INOX</b> > 850 N/mm <sup>2</sup>	GRAUGUSS CAST IRON GHISA GRIGIA	<b>Ti</b>	<b>Cu, Ms</b>	<b>Al</b>	
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	d1 <sub>e8</sub> mm	d2 <sub>e9</sub> mm	d3 <sub>h9</sub> mm	l1 mm	l2 mm	Z	Code 2140 Art.-Nr.	€
<b>M 3</b>	3,20	6,00	5,00	71	14	3	0 2140006001 00	<b>16,78</b>
<b>M 3,5</b>	3,70	6,50	5,00	71	14	3	0 2140006501 00	<b>18,59</b>
<b>M 4</b>	4,30	8,00	5,00	71	14	3	0 2140008001 00	<b>15,53</b>
<b>M 5</b>	5,30	10,00	8,00	80	18	3	0 2140010001 00	<b>17,09</b>
<b>M 6</b>	6,40	11,00	8,00	80	18	3	0 2140011001 00	<b>17,90</b>
<b>M 8</b>	8,40	15,00	12,50	100	22	3	0 2140015001 00	<b>29,56</b>
<b>M10</b>	10,50	18,00	12,50	100	22	3	0 2140018001 00	<b>36,98</b>
<b>M12</b>	13,00	20,00	12,50	100	22	3	0 2140020001 00	<b>38,64</b>



## >> FLACHSENKER, DIN 373, MITTEL

## COUNTERBORES, DIN 373, MEDIUM

## ALLARGATORI PER SEDI VITI, DIN 373, MEDIA

### Einsatzbereich:







Für alle E- und NE-Metalle, Kunststoffe hart und weich. Zur Verwendung in Durchgangslöchern nach DIN 273 bei Einzel- und Serienfertigung.

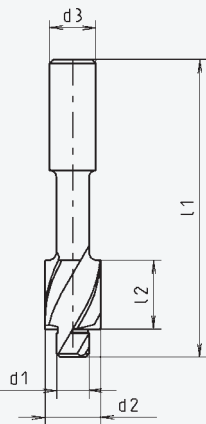
### Range of application:

For ferrous and non-ferrous metals, synthetic materials soft and hard, for working in through holes according to DIN 273. Suitable in individual and mass production.

### Impiego:

Adatti per tutti i materiali ferrosi, non ferrosi, plastiche dure e dolci, per fori passanti secondo DIN 273, sia per lavorazioni singole che di serie.

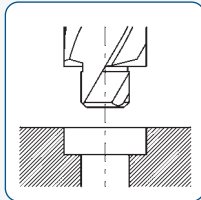
 < 400 N/mm <sup>2</sup>	 < 850 N/mm <sup>2</sup>	 < 1.100 N/mm <sup>2</sup>	 < 1.300 N/mm <sup>2</sup>	 > 45 HRC	<b>INOX</b> < 850 N/mm <sup>2</sup>	<b>INOX</b> > 850 N/mm <sup>2</sup>	<b>GRAUGUSS CAST IRON GHISA GRIGIA</b>	<b>Ti</b>	<b>Cu, Ms</b>	<b>Al</b>	
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**HSS-  
ECo**

**DIN  
373**

Typ  
Type  
Tipo  
**N**



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	d1 <sub>e8</sub> mm	d2 <sub>g9</sub> mm	d3 <sub>h9</sub> mm	l1 mm	l2 mm	Z	Code 2150 Art.-Nr.	€
<b>M 3</b>	3,40	6,00	5,00	71	14	3	0 2150006001 00	<b>16,78</b>
<b>M 3,5</b>	3,90	6,50	5,00	71	14	3	0 2150006501 00	<b>18,59</b>
<b>M 4</b>	4,50	8,00	5,00	71	14	3	0 2150008001 00	<b>15,53</b>
<b>M 5</b>	5,50	10,00	8,00	80	18	3	0 2150010001 00	<b>17,09</b>
<b>M 6</b>	6,60	11,00	8,00	80	18	3	0 2150011001 00	<b>17,90</b>
<b>M 8</b>	9,00	15,00	12,50	100	22	3	0 2150015001 00	<b>29,56</b>
<b>M10</b>	11,00	18,00	12,50	100	22	3	0 2150018001 00	<b>36,98</b>
<b>M12</b>	13,50	20,00	12,50	100	22	3	0 2150020001 00	<b>38,64</b>



## >> FLACHSENKER FÜR AUSWECHSELBARE FÜHRUNGSZAPFEN, MK-SCHAFT, DIN 375

### Einsatzbereich:

Für alle E- und NE-Metalle, Kunststoffe hart und weich. Zur Verwendung in Durchgangslöchern nach DIN 273 bei Einzel- und Serienfertigung.

## COUNTERBORES FOR DETACHABLE PILOTS, MT-SHANK, DIN 375




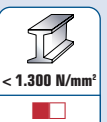
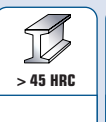
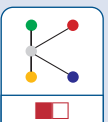
### Range of application:

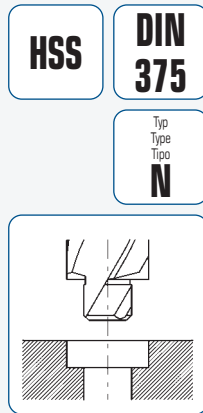
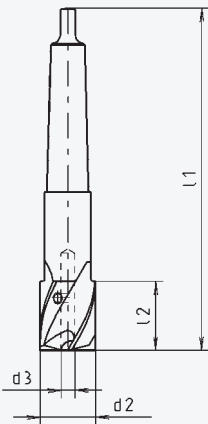
For ferrous and non-ferrous metals, synthetic materials soft and hard, for working in through holes according to DIN 273. Suitable in individual and mass production.

## ALLARGATORI CON GUIDA INTERCAMBIABILE, CONO MORSE, DIN 375



### Impiego:

Adatti per tutti i materiali ferrosi, non ferrosi plastiche dure e dolci, per fori passanti secondo DIN 273, sia per lavorazioni singole che di serie.

 < 400 N/mm <sup>2</sup>	 < 850 N/mm <sup>2</sup>	 < 1.100 N/mm <sup>2</sup>	 < 1.300 N/mm <sup>2</sup>	 > 45 HRC	<b>INOX</b> < 850 N/mm <sup>2</sup>	<b>INOX</b> > 850 N/mm <sup>2</sup>	GRAUGUSS CAST IRON GHISA GRIGIA	<b>Ti</b>	<b>Cu, Ms</b>	<b>Al</b>	
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	d <sub>2,9</sub> mm	d <sub>3</sub> mm	l <sub>1</sub> mm	l <sub>2</sub> mm		Z	Code 2160 Art.-Nr.	€
<b>M 8</b>	15,00	4,00	132	22	2	3	0 2160015001 00	<b>59,04</b>
<b>M10</b>	18,00	5,00	140	25	2	3	0 2160018001 00	<b>61,20</b>
<b>M12</b>	20,00	5,00	140	25	2	3	0 2160020001 00	<b>64,84</b>
<b>M14</b>	24,00	6,00	150	30	2	3	0 2160024001 00	<b>72,20</b>
<b>M16</b>	26,00	8,00	180	35	3	3	0 2160026001 00	<b>82,05</b>
<b>M18</b>	30,00	8,00	180	35	3	3	0 2160030001 00	<b>101,70</b>
<b>M20</b>	33,00	10,00	190	40	3	3	0 2160033001 00	<b>113,20</b>
<b>M22</b>	36,00	10,00	190	40	3	3	0 2160036001 00	<b>127,20</b>
<b>M24</b>	40,00	10,00	190	40	3	3	0 2160040001 00	<b>149,30</b>



## >> FÜHRUNGZAPFEN, DIN 1868

## PILOTS, DIN 1868

## GUIDE, DIN 1868

### Einsatzbereich:

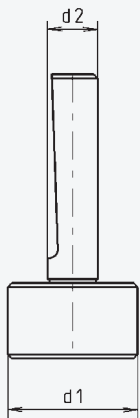
Für Flachsenker DIN 375 und Kegelsenker  
DIN 1867 für Durchgangslöcher nach DIN 69.

### Range of application:

For counterbores DIN 375 and countersinks  
DIN 1867 for body holes according to DIN 69.


### Impiego:

Per allargatori DIN 375 e svasatori DIN 1867.  
Adatte per fori passanti secondo DIN 69.




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### ► für Durchgangslöcher „fein“ | for body holes “fine” | per fori passanti “fine”

	d1 <sub>e8</sub> mm	d2 <sub>f7</sub> mm	Code 2180 Art.-Nr.	€
M 8	8,40	4,00	0 2180008401 00	16,85
M10	10,50	5,00	0 2180010501 00	20,76
M12	13,00	5,00	0 2180013001 00	20,76
M14	15,00	6,00	0 2180015001 00	23,58
M16	17,00	8,00	0 2180017001 00	25,08
M18	19,00	8,00	0 2180019001 00	25,08
M20	21,00	10,00	0 2180021001 00	30,43
M22	23,00	10,00	0 2180023001 00	30,43
M24	25,00	10,00	0 2180025001 00	30,43

### ► für Durchgangslöcher „mittel“ | for body holes “medium” | per fori passanti “media”

	d1 <sub>e8</sub> mm	d2 <sub>f7</sub> mm	Code 2190 Art.-Nr.	€
M 8	9,00	4,00	0 2190009001 00	16,85
M10	11,00	5,00	0 2190011001 00	20,76
M12	13,50	5,00	0 2190013501 00	20,76
M14	15,50	6,00	0 2190015501 00	23,58
M16	17,50	8,00	0 2190017501 00	25,08
M18	20,00	8,00	0 2190020001 00	25,08
M20	22,00	10,00	0 2190022001 00	30,43
M22	24,00	10,00	0 2190024001 00	30,43
M24	26,00	10,00	0 2190026001 00	30,43



## >> KEGELSENKER, DIN 334 C, 60°

### Einsatzbereich:

Für alle E- und NE-Metalle, Kunststoffe hart und weich. Universell einsetzbares Entgrat- und Senkwerkzeug für Bohrungen aller Art. Sehr gute Schneideigenschaften ohne „Rattermarken“, durch radialen Hinterschliff leicht nachschärfbar an der Spanfläche.

## COUNTERSINKS, DIN 334 C, 60°

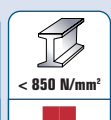


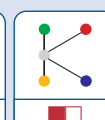
### Range of application:

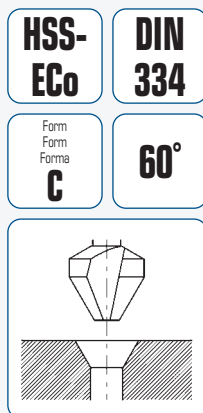
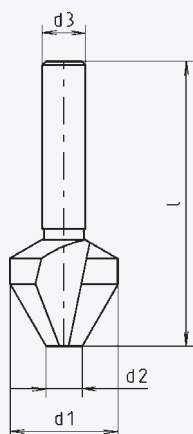
For ferrous and non-ferrous metals, synthetic materials soft and hard. Universal deburring and sink tool for all kind of borings. Excellent cutting features guarantee a smooth surface without burrs; profile relief facilitates an easy regrind.

## SVASATORI, DIN 334 C, 60°

### Impiego:

Adatti per tutti i materiali ferrosi, non ferrosi, plastiche dure e dolci, per sbavature e svasature di tutti i tipi di fori. Ottime proprietà di taglio senza segni di "rigature", mentre la spoglia radiale permette una facile riaffilatura.

 < 400 N/mm <sup>2</sup>	 < 850 N/mm <sup>2</sup>	 < 1.100 N/mm <sup>2</sup>	 < 1.300 N/mm <sup>2</sup>	 > 45 HRC	<b>INOX</b> < 850 N/mm <sup>2</sup>	<b>INOX</b> > 850 N/mm <sup>2</sup>	GRAUGUSS CAST IRON GHISA GRIGIA	<b>Ti</b>	<b>Cu, Ms</b>	<b>Al</b>	
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d1 mm	d2 mm	d3 <sub>h9</sub> mm	l mm	Z	Code 2280 Art.-Nr.	€
6,30	1,60	5,00	45	3	0 2280006301 00	10,40
8,00	2,00	6,00	50	3	0 2280008001 00	10,40
12,50	3,20	8,00	56	3	0 2280012501 00	13,33
16,00	4,00	10,00	63	3	0 2280016001 00	17,08
20,00	5,00	10,00	67	3	0 2280020001 00	23,71
25,00	6,30	10,00	71	3	0 2280025001 00	32,65



## >> KEGELSENKER, DIN 335 C, 90°

### Einsatzbereich:

Für alle E- und NE-Metalle, Kunststoffe hart und weich. Universell einsetzbares Entgrat- und Senkwerkzeug für Bohrungen aller Art. Sehr gute Schneideigenschaften ohne „Rattermarken“, durch radialen Hinterschliff leicht nachschärfbar an der Spanfläche.

## COUNTERSINKS, DIN 335 C, 90°







### Range of application:

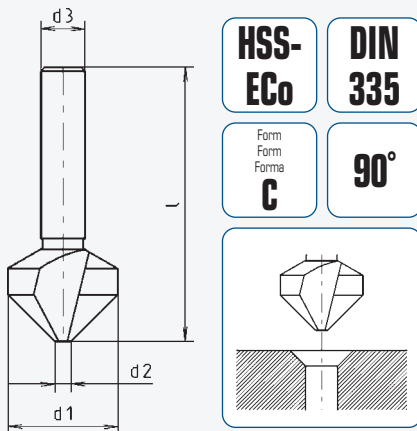
For ferrous and non-ferrous metals, synthetic materials soft and hard. Universal deburring and sink tool for all kind of borings. Excellent cutting features guarantee a smooth surface without burrs; profile relief facilitates an easy regrind.

## SVASATORI, DIN 335 C, 90°

### Impiego:

Adatti per tutti i materiali ferrosi, non ferrosi, plastiche dure e dolci, per sbavature e svasature di tutti i tipi di fori. Ottime proprietà di taglio senza segni di "rigature", mentre la spoglia radiale permette una facile riaffilatura.

 < 400 N/mm <sup>2</sup>	 < 850 N/mm <sup>2</sup>	 < 1.100 N/mm <sup>2</sup>	 < 1.300 N/mm <sup>2</sup>	 > 45 HRC	<b>INOX</b> < 850 N/mm <sup>2</sup>	<b>INOX</b> > 850 N/mm <sup>2</sup>	<b>GRAUGUSS CAST IRON GHISA GRIGIA</b>	<b>Ti</b>	<b>Cu, Ms</b>	<b>Al</b>	
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d1 mm	d2 mm	d3 <sub>h9</sub> mm	l mm	Z	Code 2290 Art.-Nr.	€	Code 2297 Art.-Nr.	€
4,30	1,30	4,00	40	3	0 2290004301 00	9,01		
5,00	1,50	4,00	40	3	0 2290005001 00	8,71	0 2297005001 00	21,30
5,30	1,50	4,00	40	3	0 2290005301 00	8,91		
6,00	1,50	5,00	45	3	0 2290006001 00	9,06	0 2297006001 00	21,30
6,30	1,50	5,00	45	3	0 2290006301 00	9,06	0 2297006301 00	21,30
8,00	2,00	6,00	50	3	0 2290008001 00	10,02	0 2297008001 00	21,30
8,30	2,00	6,00	50	3	0 2290008301 00	10,46	0 2297008301 00	21,30
9,40	2,20	6,00	50	3	0 2290009401 00	11,20		
10,00	2,50	6,00	50	3	0 2290010001 00	12,03	0 2297010001 00	25,63
10,40	2,50	6,00	50	3	0 2290010401 00	12,40	0 2297010401 00	26,19
11,50	2,80	8,00	56	3	0 2290011501 00	12,93		27,91
12,40	2,80	8,00	56	3	0 2290012401 00	13,22	0 2297012401 00	
13,40	2,90	8,00	56	3	0 2290013401 00	13,98		
15,00	3,20	10,00	60	3	0 2290015001 00	16,25	0 2297015001 00	32,20
16,50	3,20	10,00	60	3	0 2290016501 00	16,25	0 2297016501 00	34,49
19,00	3,50	10,00	63	3	0 2290019001 00	22,00	0 2297019001 00	46,44
20,50	3,50	10,00	63	3	0 2290020501 00	22,22	0 2297020501 00	47,96
23,00	3,80	10,00	67	3	0 2290023001 00	28,72	0 2297023001 00	61,06
25,00	3,80	10,00	67	3	0 2290025001 00	29,87	0 2297025001 00	64,74
31,00	4,20	12,00	71	3	0 2290031001 00	45,82	0 2297031001 00	98,84



## >> KEGELSENKER MIT MK-SCHAFT, DIN 335 D, 90°

### Einsatzbereich:

Für alle E- und NE-Metalle, Kunststoffe hart und weich. Universell einsetzbares Entgrat- und Senkwerkzeug für Bohrungen aller Art. Sehr gute Schneideigenschaften ohne „Rattermarken“, durch radialen Hinterschliff leicht nachschärfbar an der Spanfläche.

## COUNTERSINKS WITH MT-SHANK, DIN 335 D, 90°

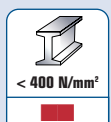
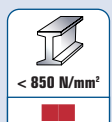



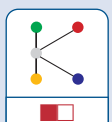
### Range of application:

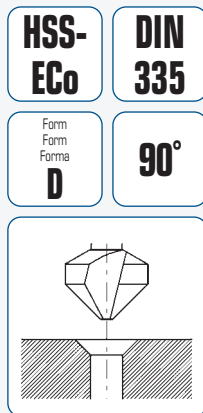
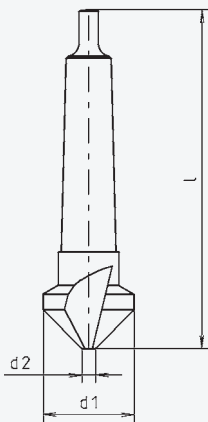
For ferrous and non-ferrous metals, synthetic materials soft and hard. Universal deburring and sink tool for all kind of borings. Excellent cutting features guarantee a smooth surface without burrs; profile relief facilitates an easy regrind.

## SVASATORI, CONO MORSE, DIN 335 D, 90°


### Impiego:

Adatti per tutti i materiali ferrosi, non ferrosi, plastiche dure e dolci, per sbavature e svasature di tutti i tipi di fori. Ottime proprietà di taglio senza segni di "rigature", mentre la spoglia radiale permette una facile riaffilatura.

 < 400 N/mm <sup>2</sup>	 < 850 N/mm <sup>2</sup>	 < 1.100 N/mm <sup>2</sup>	 < 1.300 N/mm <sup>2</sup>	 > 45 HRC	<b>INOX</b> < 850 N/mm <sup>2</sup>	<b>INOX</b> > 850 N/mm <sup>2</sup>	GRAUGUSS CAST IRON GHISA GRIGIA	<b>Ti</b>	<b>Cu, Ms</b>	<b>Al</b>	
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d1 mm	d2 mm	l mm		Z	Code 2330 Art.-Nr.	€
16,50	3,20	85	1	3	0 2330016501 00	38,19
20,50	3,50	100	2	3	0 2330020501 00	50,84
23,00	3,80	106	2	3	0 2330023001 00	50,84
25,00	3,80	106	2	3	0 2330025001 00	50,84
31,00	4,20	112	2	3	0 2330031001 00	59,04
34,00	4,50	118	2	3	0 2330034001 00	63,98
37,00	4,80	118	2	3	0 2330037001 00	71,40
40,00	10,00	140	3	3	0 2330040001 00	80,41
50,00	14,00	150	3	3	0 2330050001 00	100,90



## >> HSS-ECO-KEGELSENKER-SÄTZE, DIN 335 C, 90°

### Einsatzbereich:

Für alle E- und NE-Metalle, Kunststoffe hart und weich. Universell einsetzbares Entgrat- und Senkwerkzeug für Bohrungen aller Art. Sehr gute Schneideigenschaften ohne „Rattermarken“, durch radialen Hinterschliff leicht nachschärfbar an der Spanfläche.

## HSS-ECO COUNTERSINK-SETS, DIN 335 C, 90°







### Range of application:

For ferrous and non-ferrous metals, synthetic materials soft and hard. Universal deburring and sink tool for all kind of borings. Excellent cutting features guarantee a smooth surface without burrs; profile relief facilitates an easy regrind.

## ASSORTIMENTI SVASATORI HSS-ECO, DIN 335, 90°

### Impiego:

Adatti per tutti i materiali ferrosi, non ferrosi, plastiche dure e dolci, per sbavature e svasature di tutti i tipi di fori. Ottime proprietà di taglio senza segni di "rigature", mentre la spoglia radiale permette una facile riaffilatura.

 < 400 N/mm <sup>2</sup>	 < 850 N/mm <sup>2</sup>	 < 1.100 N/mm <sup>2</sup>	 < 1.300 N/mm <sup>2</sup>	 > 45 HRC	<b>INOX</b> < 850 N/mm <sup>2</sup>	<b>INOX</b> > 850 N/mm <sup>2</sup>	GRAUGUSS CAST IRON GHISA GRIGIA	<b>Ti</b>	<b>Cu, Ms</b>	<b>Al</b>	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



**HSS Eco-Kegelsenker-Satz, 4-tlg.**  
**HSS Eco Countersink set, 4 pcs.**  
**Assortimenti svasatori HSS Eco, 4 pz.**  
Art.-Nr. 0 2290000041 00

€ 82,63



**HSS Eco-Kegelsenker-Satz, 4-tlg., ALUNIT°**  
**HSS Eco Countersink set, 4 pcs., ALUNIT°**  
**Assortimenti svasatori HSS Eco, 4 pz., ALUNIT°**  
Art.-Nr. 0 2297000041 00

€ 124,47

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